

DPD 4207-61
7 July 1961

MEMORANDUM FOR: Acting Chief, DPD

SUBJECT: Helicopters for Far East Missions

25X1C 1. This paper is to summarize the results of comparing various presently available helicopters to fulfill resupply mission requirements of [REDACTED]. The mission requirement is for a helicopter to operate out of fields at elevations of 12,000 to 14,000 feet altitude, lift 2,000 pounds of payload, fly 80 nautical miles, and return without refueling. A study of the terrain in the area of concern shows a need also that the helicopter should be able to cruise at 20,000 feet in order to reach the desired destinations without undue circumnavigation.

25X1A 2. A study for this requirement was made by the Air Force approximately six months ago. The results were submitted to Mr. [REDACTED] Deputy for Requirements Review, in the office of Dr. [REDACTED] 25X1A The investigation concluded that only turbine powered helicopters were capable of performing the mission under the conditions of high altitude and hot day temperatures. The two helicopters considered possible for the mission were the single engine Kaman H-43B and the twin engine Vertol 107 II. Of the two, the Air Force recommendation was for the H-43B partially due to the ready availability and the \$300,000 price tag as compared to \$600,000 to \$700,000 for the Vertol.

3. Comparative figures are not readily available for an accurate comparison. The approximate figures are given below:

	H-43B	Vertol
Gross Weight	7,100	18,450
Payload	2,700	7,290
Range	175	215
Max. Speed	103	141
Hovering Ceiling	20,000	
Seats (incl. crew)	3	28
Number Engines	1	2
Rating (each)	860	1,250
Engine Manufacturer	Lycoming	General Electric
Model Number	T-53	T58-8/CT58-110
Type Engine	Gas Turbine	Gas Turbine
Fuel Capacity	198 Gallons	

4. Two Sikorsky helicopters also fit into the overall consideration.

Page 2

25X1C

The S-62 Single engine helicopter which at present is only available on the commercial market, and the twin engine S-61. The S-62 has been used [REDACTED] but the high disc loading on the two-bladed rotor has caused undue problems in turbulence. The tail rotor concept also creates problems of landing in crosswinds in addition to power extraction losses to run this rotor. A four bladed special rotor was installed on one S-62, but the results are not known. It is known, however, that performance losses were incurred due to the increased weight of the rotor housing and the blades. The S-61 is a six-bladed rotor designed for anti-submarine duty and has not been tested for high altitude capability at reduced weights.

5. Overall, it would appear that the Kaman H-43B is the best helicopter to accomplish the mission. It will perform the mission as set forth even under the restriction of hot day temperatures. The vehicle is readily available at a comparatively modest price. It is important, however, to reflect on the limited range of this helicopter (although all helicopters have the same type limitation). The best speed for maximum range is 90 knots. The range is 175 nautical miles, thus a two hour fuel supply. Winds in the altitude/area of consideration can often be as high as 50-60 knots. The reduced ground speed could well run the helicopter out of fuel prior to arrival at the half-way point. On the positive side, the four bladed rotor with low disc loading helps in the ability to fly in regions of turbulence and to land in crosswinds. It must also be pointed out, however, that the extreme turbulence and high winds of the area will cause all helicopter operation's to be hazardous.

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